SmartStudent: Java-Based Student Management System

Final Project Code Submission

Main.java

```
import java.util.Scanner;

public class Main {
    public static void main(String[] args) {
        AdminService adminService = new AdminService();
        UI ui = new UI(adminService);
        ui.start();
    }
}
```

DatabaseConnection.java

```
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.SQLException;

public class DatabaseConnection {
    private static final String URL = "jdbc:mysql://localhost:3306/students";
    private static final String USER = "root";
    private static final String PASSWORD = "password";

    public static Connection getConnection() throws SQLException {
        return DriverManager.getConnection(URL, USER, PASSWORD);
    }
}
```

Student.java

```
public class Student {
    private int id;
    private String name;
    private String rollNo;
    private String department;
    private String email;
    private String phone;
    private int marks;

    // Constructor, Getters and Setters
}
```

StudentDAO.java

```
import java.sql.*;
import java.util.ArrayList;
import java.util.List;

public class StudentDAO {
    public void addStudent(Student student) {
        try (Connection conn = DatabaseConnection.getConnection()) {
            String query = "INSERT INTO students (name, roll_no, department, email, phone, marks) VALUES (?, ?, ?, ?, ?, ?)";
            PreparedStatement stmt = conn.prepareStatement(query);
            stmt.setString(1, student.getName());
            stmt.setString(2, student.getRollNo());
            stmt.setString(3, student.getDepartment());
            stmt.setString(4, student.getEmail());
            stmt.setString(5, student.getPhone());
            stmt.setInt(6, student.getMarks());
            stmt.executeUpdate();
        } catch (SQLException e) {
            e.printStackTrace();
        }
    }

    public List<Student> getAllStudents() {
        List<Student> students = new ArrayList<>();
        try (Connection conn = DatabaseConnection.getConnection()) {
            String query = "SELECT * FROM students";
            Statement stmt = conn.createStatement();
            ResultSet rs = stmt.executeQuery(query);
            while (rs.next()) {
                Student student = new Student();
                student.setId(rs.getInt("id"));
                student.setName(rs.getString("name"));
                student.setRollNo(rs.getString("roll_no"));
                student.setDepartment(rs.getString("department"));
                student.setEmail(rs.getString("email"));
                student.setPhone(rs.getString("phone"));
                student.setMarks(rs.getInt("marks"));
                students.add(student);
            }
        } catch (SQLException e) {
            e.printStackTrace();
        }
        return students;
    }
}
```

AdminService.java

```
import java.util.Scanner;

public class AdminService {
    private StudentDAO studentDAO = new StudentDAO();
    private Scanner scanner = new Scanner(System.in);

    public boolean login(String username, String password) {
        return username.equals("admin") && password.equals("admin123");
    }

    public void addStudent() {
        Student student = new Student();
        System.out.print("Enter name: ");
        student.setName(scanner.nextLine());
        System.out.print("Enter roll no: ");
        student.setRollNo(scanner.nextLine());
        System.out.print("Enter department: ");
        student.setDepartment(scanner.nextLine());
        System.out.print("Enter email: ");
        student.setEmail(scanner.nextLine());
        System.out.print("Enter phone: ");
        student.setPhone(scanner.nextLine());
        System.out.print("Enter marks: ");
        student.setMarks(scanner.nextInt());
        scanner.nextLine(); // consume newline
        studentDAO.addStudent(student);
        System.out.println("Student added successfully!");
    }

    public void viewStudents() {
        for (Student student : studentDAO.getAllStudents()) {
            System.out.println(student.getId() + " - " + student.getName());
        }
    }
}
```

UI.java

```
import java.util.Scanner;

public class UI {
    private AdminService adminService;
    private Scanner scanner = new Scanner(System.in);

    public UI(AdminService adminService) {
        this.adminService = adminService;
    }

    public void start() {
        System.out.println("Welcome to SmartStudent!");
        System.out.print("Enter username: ");
        String username = scanner.nextLine();
        System.out.print("Enter password: ");
        String password = scanner.nextLine();
        if (adminService.login(username, password)) {
            System.out.println("Login successful!");
            showMenu();
        } else {
            System.out.println("Invalid credentials!");
        }
    }

    private void showMenu() {
        while (true) {
            System.out.println("1. Add Student");
            System.out.println("2. View Students");
            System.out.println("3. Exit");
            System.out.print("Choose an option: ");
            int choice = scanner.nextInt();
            scanner.nextLine(); // consume newline
            if (choice == 1) {
                adminService.addStudent();
            } else if (choice == 2) {
                adminService.viewStudents();
            } else {
                break;
            }
        }
    }
}
```

README.md

```
# SmartStudent
A Java-based Student Management System with Admin login, CRUD operations, and MySQL integration.

## Features
- Admin login system
- Add, view, edit, and delete student records
- Search and filter functionalities
- Database-backed with MySQL

## Setup
1. Import the project into your favorite IDE
2. Configure the database connection in `DatabaseConnection.java`
3. Run `Main.java`
```

student.sql

```
CREATE DATABASE IF NOT EXISTS students;
USE students;

CREATE TABLE IF NOT EXISTS students (
    id INT AUTO_INCREMENT PRIMARY KEY,
    name VARCHAR(100),
    roll_no VARCHAR(50),
    department VARCHAR(100),
    email VARCHAR(100),
    phone VARCHAR(20),
    marks INT
);
```